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SPACE GATEWAY SUPPORT (SGS) **SGS-01 57 23.00 99(November 2006)**

Preparing Activity: SGS-DE **Superseding SGS-01 57 23.00 99 (April 2006)**

SGS GUIDE SPECIFICATIONS

References are NOT in Agreement with UMRL dated 09 October 2006

Revised throughout - changes not indicated by CHG tags

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SECTION 01 57 23.00 99

TEMPORARY STORM WATER POLLUTION CONTROL
11/06

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NOTES: This guide specification covers the requirements for temporary construction measures most used in complying the Best Management Practices of the storm water pollution prevention plan as required by a NPDES Permit.

This guide specification is to be used in the preparation of project specifications in accordance with ER 1110-2-1200 and ER 1110-1-8155.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.
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PART 1 GENERAL

1.1 REFERENCES

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NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a RID outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.
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The publications listed below form a part of this section and the work requirements:

ASTM INTERNATIONAL (ASTM)

ASTM D 4439	(2004) Geosynthetics
ASTM D 4491	(1999; R 2004) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(2004) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(1991; R 2003) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(2004) Determining Apparent Opening Size of a Geotextile
ASTM D 4873	(2002) Identification, Storage, and Handling of Geosynthetic Rolls and Samples

1.2 GENERAL

Implement the storm water pollution prevention measures specified in this section in a manner that meets the requirements of Section 01 35 43.00 99 ENVIRONMENTAL PROCEDURES and the requirements of the National Pollution Discharge Elimination System (NPDES) permit for this project.

1.3 SUBMITTALS

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NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project. Keep submittals to the minimum required for adequate quality control. Include a columnar list of appropriate products and tests beneath each submittal description.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for

Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy, Air Force, and NASA projects.

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Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES in sufficient detail to show full compliance with the specification:

SD-07 Certificates

Mill Certificate or Affidavit
Inspection Reports

Certificate attesting that the Subcontractor has met all specified requirements.

[1.4 STORMWATER DISCHARGE PERMITTING

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NOTE: Construction activities resulting in disturbance of one (1) or more acre of total area requires execution and submission of a National Pollution Discharge Elimination System (NPDES) - Stormwater Program Notice of Intent (NOI) and use of the Generic Permit for Stormwater Discharge from Large and Small Construction Activities.
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Maintain compliance documentation for the NPDES - including maintenance implemented Best Management Practices (BMP's) and NOI prescribed documentation. A copy of the NOI or letter from FDEP confirming coverage under this generic permit must be posted at the construction site in a prominent place for public viewing.

]1.5 EROSION AND SEDIMENT CONTROLS

The controls and measures required by the Subcontractor are described below.

1.5.1 Stabilization Practices

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NOTE: Describe interim stabilization practices, including site-specific scheduling of the implementation of the practices. Plans must ensure that existing vegetation is preserved where attainable and disturbed areas are stabilized. Show locations for stabilization practices on the drawings.
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The stabilization practices to be implemented must include [temporary seeding,] [mulching,] [geotextiles,] [sod stabilization,] [vegetative

buffer strips,] [erosion control matts,] [protection of trees,] [preservation of mature vegetation,] [etc]. On his daily CQC Report, the Subcontractor must record the dates when the major grading activities occur, (e.g., [clearing] [and grubbing,] [excavation,] [embankment,] [and] [grading]); when construction activities temporarily or permanently cease on a portion of the site; and when stabilization practices are initiated. Except as provided in paragraphs UNSUITABLE CONDITIONS and NO ACTIVITY FOR LESS THAN 21 DAYS, initiate stabilization practices as soon as practicable, but no more than 14 days, in any portion of the site where construction activities have [temporarily or] permanently ceased.

1.5.1.1 Unsuitable Conditions

Where the initiation of stabilization measures by the fourteenth day after construction activity [temporarily or] permanently ceases is precluded by unsuitable conditions caused by the weather, initiate stabilization practices as soon as practicable after conditions become suitable.

1.5.1.2 No Activity for Less Than 21 Days

Where construction activity is to resume on a portion of the site within 21 days from when activities ceased (e.g., the total time period that construction activity is temporarily ceased is less than 21 days), then temporary stabilization practices do not have to be initiated on that portion of the site by the fourteenth day after construction activity temporarily ceased.

1.5.2 Structural Practices

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NOTES: Describe structural practices to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable. A permit under Section 404 of the Clean Water Act may be required for certain structural practices. Check with Permits Branch.

For common drainage locations that serve a disturbed area of 4 or more hectares (10 or more acres) at one time, a temporary or permanent detention basin providing 252 cubic meters of storage per hectare (3,600 cubic feet of storage per acre) drained, or equivalent control measures, must be provided where attainable until stabilization of the site. The 252 cubic meters of storage per hectare (3,600 cubic feet of storage per acre) drained does not apply to flows from offsite areas and flows from onsite areas that are either undisturbed or have undergone final stabilization where such flows are diverted around the sediment basin. For drainage locations which serve a disturbed area of 4 or more hectares (10 or more acres) at one time and where a temporary sediment basin providing 252 cubic meters of storage per hectare (3,600 cubic feet of storage per acre) drained, or equivalent sediment controls, is not attainable, sediment controls are required for all sideslope and downslope boundaries of the construction area.

For drainage locations serving less than 4 hectares (10 acres), sediment traps, silt fences, or equivalent sediment controls are required for all sideslope and downslope boundaries of the construction area unless a sediment basin providing storage for 252 cubic meters of storage per hectare (3,600 cubic feet of storage per acre) drained is provided.

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Implement structural practices to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Implement structural practices in a timely manner during the construction process in accordance with approved and signed Stormwater Pollution Prevention Plan (SWPPP) provided by the SGS Subcontract Administrator to minimize erosion and sediment runoff. Structural practices must include the following devices. [Location and details of installation and construction are shown on the drawings.]

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NOTE: Listed are examples of typical structural devices. Requirements for Silt Fences, Straw Bales, and Diversion Dikes are contained within this Guide Specification. Specifications for other structural practices used in the project must be added to this section.

a. [Silt fences.]
b. [Straw bales.]
c. [Diversion dikes.]
d. [Drainage swales.]
e. [Check dams.]
f. [Subsurface drains.]
g. [Pipe Slope drains.]
h. [Level spreaders.]
i. [Storm drain inlet protection.]
j. [Rock outlet protection.]
k. [Sediment traps.]
l. [Reinforced soil retaining systems.]
m. [Gabions.]
n. [Sediment basins.]
o. [_____].

The permanent stabilization practices which are to be installed under the contract must be specified in other section of the specifications. These are measures that must be installed during the construction process to control pollutants in storm water discharges that occur after construction operations have been completed. Structural measures must be placed on upland soils to the degree attainable. The installation of these devices may be subject to Section 404 of the Clean Water Act.

A goal of 80 percent removal of total suspended solids from these flows which exceed predevelopment levels must be used in designing and installing

storm water management controls (where practicable). Where this goal is not met, the permittee must provide justification for rejecting each practice listed above based on site conditions.

Place velocity dissipation devices at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive velocity flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected.

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[1.5.2.1 Silt Fences

Provide silt fences as a temporary structural practice to minimize erosion and sediment runoff. Properly install silt fences to effectively retain sediment before commencing each phase of work where erosion could occur in the form of sheet and rill erosion (e.g. clearing and grubbing, excavation, embankment, and grading). Install silt fences in the locations indicated on the drawings and/or SWPPP and any other areas deemed necessary. Final removal of silt fence barriers must be upon approval by the SGS Subcontract Administrator.

][1.5.2.2 Straw Bales

Provide bales of straw as a temporary structural practice to minimize erosion and sediment runoff. Properly place bales to effectively retain sediment immediately after completing each phase of work (e.g., clearing and grubbing, excavation, embankment, and grading) in each independent runoff area (e.g., after clearing and grubbing in a area between a ridge and drain, place bales as work progresses, remove/replace/relocate bales as needed for work to progress in the drainage area). Areas where straw bales are to be used are shown on the drawings and/or SWPPP. Final removal of straw bale barriers must be upon approval by the SGS Subcontract Administrator.

][1.5.2.3 Diversion Dikes

Diversion dikes must have a maximum channel slope of 2 percent and must be adequately compacted to prevent failure. The minimum height measured from the top of the dike to the bottom of the channel must be 0.5 m [18 inches]. The minimum base width must be 1.8 m 6 feet and the minimum top width must be 0.6 m. [2 feet]. Ensure that the diversion dikes are not damaged by construction operations or traffic. Locate diversion dikes as shown on the drawings and/or SWPPP.

]PART 2 PRODUCTS

2.1 COMPONENTS FOR SILT FENCES

2.1.1 Filter Fabric

The geotextile must comply with the requirements of ASTM D 4439, and must consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. The filament must consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and must contain stabilizers and/or

inhibitors added to the base plastic to make the filaments resistance to deterioration due to ultraviolet and heat exposure. Synthetic filter fabric must contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of -18 to 49 degrees C [0 to 120 degrees F]. The filter fabric must meet the following requirements:

FILTER FABRIC FOR SILT SCREEN FENCE

PHYSICAL PROPERTY	TEST PROCEDURE	STRENGTH REQUIREMENT
Grab Tensile	ASTM D 4632	445 N min.
Elongation (%)		30 % max.
Trapezoid Tear	ASTM D 4533	245 N min.
Permittivity	ASTM D 4491	0.2 sec-1
AOS (U.S. Std Sieve)	ASTM D 4751	20-100

FILTER FABRIC FOR SILT SCREEN FENCE

PHYSICAL PROPERTY	TEST PROCEDURE	STRENGTH REQUIREMENT
Grab Tensile	ASTM D 4632	100 lbs. min.
Elongation (%)		30 % max.
Trapezoid Tear	ASTM D 4533	55 lbs. min.
Permittivity	ASTM D 4491	0.2 sec-1
AOS (U.S. Std Sieve)	ASTM D 4751	20-100

2.1.2 Silt Fence Stakes and Posts

Use wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction, must have a minimum cross section of 50 mm by 50 mm [2 inches by 2 inches] when wood is used, and must have a minimum length of 1.5 m [5 feet]. Steel posts (standard "U" or "T" section) utilized for silt fence construction, must have a minimum mass of 1.98 kg per linear meter [weight of 1.33 pounds per linear foot] and a minimum length of 1.5 m [5 feet].

2.1.3 Mill Certificate or Affidavit

Provide a mill certificate or affidavit attesting that the fabric and factory seams meet chemical, physical, and manufacturing requirements specified above. The mill certificate or affidavit must specify the actual Minimum Average Roll Values and must identify the fabric supplied by roll identification numbers. Submit a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the filter fabric.

2.1.4 Identification Storage and Handling

Identify, store and handle fabric in accordance with ASTM D 4873.

2.2 COMPONENTS FOR STRAW BALES

The straw in the bales must be stalks from oats, wheat, rye, barley, rice, or from grasses such as bahia, bermuda, etc., furnished in air dry condition. The bales must have a standard cross section of 350 mm by 450 mm [14 inches by 18 inches]. All bales must be either wire-bound or string-tied. Use either wooden stakes or steel posts to secure the straw bales to the ground. Wooden stakes utilized for this purpose, must have a minimum dimensions of 50 mm by 50 mm [2 inches x 2 inches] in cross section and must have a minimum length of 1 m [3 feet]. Steel posts (standard "U" or "T" section) utilized for securing straw bales, must have a minimum mass of 1.98 kg per linear meter [weight of 1.33 pounds per linear foot] and a minimum length of 1 m [3 feet].

PART 3 EXECUTION

3.1 INSTALLATION OF SILT FENCES

Silt fences must extend a minimum of 400 mm [16 inches] above the ground surface and must not exceed 860 mm [34 inches] above the ground surface. Filter fabric must be from a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, splice filter fabric together by overlapping the two end support posts together and twisting the bundle at least twice to insure a secure seal. Excavate a trench approximately 100 mm [4 inches] wide and 100 mm [4 inches] deep on the upslope side of the location of the silt fence. Backfill the 100 mm by 100 mm [4-inch by 4-inch] trench and compact the soil over the filter fabric. Remove silt fences upon approval by the SGS Subcontract Administrator.

3.2 INSTALLATION OF STRAW BALES

Place straw bales in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another. Install straw bales so that bindings are oriented around the sides rather than along the tops and bottoms of the bales in order to prevent deterioration of the bindings. Entrench and backfill the barrier. Excavate a trench the width of a bale and the length of the proposed barrier to a minimum depth of 100 mm [4 inches]. After the bales are staked and chinked (gaps filled by wedging with straw), backfill the excavated soil against the barrier. Backfill soil must conform to the ground level on the downhill side and must be built up to 100 mm [4 inches] against the uphill side of the barrier. Scatter loose straw over the area immediately uphill from a straw bale barrier to increase barrier efficiency. Securely anchor each bale by at least two stakes driven through the bale. Drive the first stake or steel post in each bale toward the previously laid bale to force the bales together. Drive stakes or steel pickets a minimum 450 mm [18 inches] deep into the ground to securely anchor the bales.

3.3 MAINTENANCE

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NOTE: Describe the procedures to be follow during construction to maintain the vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition.
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Maintain the temporary and permanent vegetation, erosion and sediment

control measures, and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures. Follow the following procedures to maintain the protective measures.

3.3.1 Silt Fence Maintenance

Silt fences must be inspected by the SGS Subcontract Administrator. Make any required repairs promptly. Pay close attention to the repair of damaged silt fence resulting from end runs and undercutting. If the fabric on a silt fence decomposes or becomes ineffective, and the barrier is still necessary, replace the fabric promptly. Remove sediment deposits when deposits reach one-third of the height of the barrier. When a silt fence is no longer required, remove it. Shape the immediate area occupied by the fence and any sediment deposits to an acceptable grade. The areas disturbed by this shaping must receive erosion control if required.

3.3.2 Straw Bale Maintenance

Straw bale barriers must be inspected in accordance with paragraph INSPECTIONS. Pay close attention to the repair of damaged bales, end runs and undercutting beneath bales. Promptly accomplish necessary repairs to barriers or replacement of bales. Remove sediment deposits when deposits reach one-half of the height of the barrier. Bale rows used to retain sediment must be turned uphill at each end of each row. When a straw bale barrier is no longer required, remove it. Shape the immediate area occupied by the bales and any sediment deposits to an acceptable grade. Seed the areas disturbed by this shaping in accordance with [the subcontract drawings][UFGS Section 32 92 19 SEEDING].

3.3.3 Diversion Dike Maintenance

Diversion dikes must be inspected in accordance with paragraph INSPECTIONS. Pay close attention to the repair of damaged diversion dikes and promptly accomplish necessary repairs. When diversion dikes are no longer required, shape to an acceptable grade. Seed the areas disturbed by this shaping in accordance with [the subcontract drawings][UFGS Section 32 92 19 SEEDING].

3.4 INSPECTIONS

3.4.1 General

The Government must inspect disturbed areas of the construction site, areas used for storage of materials that are exposed to precipitation that have not been finally stabilized, stabilization practices, structural practices, other controls, and area where vehicles exit the site at least once every seven (7) calendar days and within 24 hours of the end of any storm that produces 13 mm [0.5 inches] or more rainfall at the site.

3.4.2 Inspections Details

Disturbed areas [and areas used for material storage that are exposed to precipitation] must be inspected for evidence of, or the potential for, pollutants entering the drainage system. Observe erosion and sediment control measures identified in the Storm Water Pollution Prevention Plan must be observed to ensure that they are operating correctly. Discharge

locations or points must be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles exit the site must be inspected for evidence of offsite sediment tracking.

3.4.3 Inspection Reports

For each inspection conducted, the Government must immediately prepare a report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the Storm Water Pollution Prevention Plan, maintenance performed, and actions taken. The report must be furnished to the Subcontractor to be maintained in the SWPPP on the job site.

-- End of Section --